

IMAGING AND DIAGNOSTIC TESTING

CORONARY ARTERY CALCIFICATION AND THORACIC AORTIC WALL CALCIFICATION ARE ASSOCIATED WITH INCREASING CATEGORIES OF BLOOD PRESSURE

ACC Poster Contributions
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Background: The role of blood pressure control on extent of aortic and coronary atherosclerosis has not been fully evaluated. In this study we determined the association between ascending and descending thoracic aortic calcification (TAC) and coronary artery calcification (CAC) with pre-hypertension, along with stages of hypertension.

Methods: The study included 5311 asymptomatic subjects (mean age 54, 33% female) in EISNER 4 cohort who underwent computed tomography scanning. A logistic regression multivariate model adjusted for age, gender, smoking (past and present), hypercholesterolemia, diabetes, history of CAD, and blood pressure medication usage was used to predict presence of CAC or TAC.

Results: There was an increasing association between presence of CAC and TAC across categories of blood pressure ($p < 0.001$). There was also an increasing association between risk-adjusted odds of presence of CAC across categories of blood pressure. As compared to normotensive individuals, OR of presence of CAC for individuals with pre-hypertension was 1.3 (95% CI: 1.1-1.5), for Stage 1 hypertension 1.4 (95% CI: 1.2-1.7) and for Stage 2 hypertension 1.8 (95% CI: 1.3-2.5). However the OR of presence of TAC was significant only for Stage 2 hypertension.

Conclusions: Beginning with pre-hypertension, higher levels of blood pressure are associated with a higher likelihood of CAC, suggesting the possibility that optimal blood pressure control may have a favorable effect on CAC.

CAC and TAC Across Stages of Hypertension

	Normotensive	Pre-hypertensive	Stage 1	Stage 2
Blood Pressure:	<120/80 (n=2011)	120-139/80-89 (n=1904)	140-159/90-99 (n=1119)	>160/100 (n=277)
TAC (mean±SD)	56±281	93±451	258±1556	406±1269
OR of TAC Presence	1.0	1.4 (1.2-1.6)	2.3 (1.9-2.7)	4.1 (3.1-5.3)
Multivariate OR	1.0	1.0 (0.8-1.2)	1.1 (0.9-1.3)	1.5 (1.1-2.0)
CAC(mean±SD)	62±220	144±500	202±491	381±811
OR of CAC Presence	1.0	1.9 (1.6-2.1)	2.8 (2.4-3.2)	4.6 (3.5-6.1)
Multivariate OR	1.0	1.3 (1.1-1.5)	1.4 (1.2-1.7)	1.8 (1.3-2.5)